

AMENDMENTS TO THE CLAIMS IN CLEAN VERSION

All claims to be reexamined or examined are shown below in this clean version. Originally filed claims which are amended have "(once amended)" but are otherwise in clean form. Originally filed claims which are not amended are simply shown in clean form. New claims are added starting with 26. All claims are presented for examination and allowance. Please use the below clean version of the claims for the application and patent to issue therefrom. If there are any discrepancies between a marked up amended claim and a clean version of that claim, and Applicant is not aware of any, the clean version supercedes the marked up version, as the clean version is the one which Applicant wants examined and issued in the Patent. Thank you.

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1. (once amended) An image controller comprising:
an input member with associated sensors, said input member moveable on at least two axes;
a plurality of finger depressible buttons with associated sensors;
a sheet structurally connecting, at least in part, to the sensors of said input member, and said sheet structurally connecting, at least in part, to the sensors of said finger depressible buttons; said sheet having
electrically conductive traces located on said sheet, said electrically conductive traces electrically connecting with the sensors of said input member, and said electrically conductive traces electrically connecting with the sensors of said finger depressible buttons;
said image controller is connected to an image generation device;
at least one of the finger depressible buttons has a tactile resilient structuring for providing a user discernable tactile feedback;
a pressure-sensitive variable sensor is the sensor associated with said at least one of the finger depressible

buttons, whereby depression of said at least one of the finger depressible buttons provides a proportional signal representing the level of depressive pressure applied and causes said user discernable tactile feedback; and

active tactile feedback means mounted as a component of said controller for providing vibration to be felt by a hand operating said controller, said active tactile feedback means including a motor with shaft and a weight.

2. An image controller according to claim 1 in which said sheet comprises

a flexible membrane sheet.

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3. (once amended) An image controller comprising:

an input member movable on at least two axes, said input member having associated sensors; and

a plurality of finger depressible buttons, said finger depressible buttons having associated sensors; and

at least one sheet connecting to the sensors of said input member, and said at least one sheet connecting to the sensors of said finger depressible buttons;

said at least one sheet includes electrically conductive traces, said traces engaging the sensors;

at least one of the finger depressible buttons is structured with a resilient dome cap;

said resilient dome cap is structured to provide, when depressed, a tactile feedback to a human hand;

an active tactile feedback motor mounted as a component of said controller for providing vibration to be felt by a hand operating said controller.

4. An image controller according to claim 3 in which said at least one of the finger depressible buttons is associated with a pressure-sensitive variable sensor, whereby depression of said at least one of the finger depressible buttons provides a

proportional signal representing the level of depressive pressure applied.

5. (once amended) An image controller according to claim 3 wherein said active tactile feedback motor rotates an offset weight.

6. An image controller according to claim 5 wherein said at least one sheet comprises a substantially flexible sheet.

7. An image controller according to claim 6 wherein said at least one of the finger depressible buttons is associated with a pressure-sensitive variable sensor, whereby depression of said at least one of the finger depressible buttons provides a proportional signal representing the level of depressive pressure applied.

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8. (once amended) An image controller comprising:
an input member with associated sensors, said input member moveable on at least two axes; and
at least four independent finger depressible buttons with associated sensors; and
at least one sheet connecting to the sensors of said input member, and said at least one sheet connecting to the sensors of said finger depressible buttons;
active tactile feedback structure mounted as a component of said controller for providing vibration to be felt by a hand operating said controller.

9. (once amended) An image controller according to claim 8 in which at least one of the finger depressible buttons is structured with a resilient dome cap, and said active tactile feedback structure comprises an electric motor with offset weight.

10. An image controller according to claim 9 in which said image controller is connected to an image generation device.

11. An image controller according to claim 10 in which said image generation device includes a television based electronic game.

12. An image controller according to claim 11 wherein said at least one sheet comprises
a flexible membrane sheet.

13. An image controller according to claim 12 in which a plunger is positioned above said dome cap, said plunger comprising a non-conductive rigid plastic material.

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14. (once amended) An image controller according to claim 9 in which said at least one of the finger depressible buttons is associated with a pressure-sensitive variable sensor for providing a proportional signal, whereby depression of said at least one of the finger depressible buttons provides a proportional signal representing the level of depressive pressure applied.

15. An image controller according to claim 8 in which said at least one sheet comprises a flexible membrane sheet connected to
a second sheet.

16. An image controller according to claim 15 in which said second sheet is a circuit board.

17. An image controller according to claim 15 in which said second sheet is a rigid support structure for said flexible membrane sheet.

18. An image controller according to claim 16 in which said at least one sheet comprises said flexible membrane sheet further supported by a third sheet, said third sheet is a rigid membrane support structure.

19. An image controller according to claim 18 in which said at least one of the finger depressible buttons is associated with a pressure-sensitive variable sensor for providing a proportional signal, whereby depression of said at least one of the finger depressible buttons provides a proportional signal representing the level of depressive pressure applied.

20. An image controller according to claim 19 wherein said pressure-sensitive variable sensor includes an electrically conductive pill carried by said dome shaped member; said electrically conductive pill comprising deformable material and having a convexed surface shape, whereby when said button is depressed with increasing input pressure the convexed shaped material deforms to contact additional surface area to provide additional conductivity changes.

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21. (once amended) A method of interacting with an image controller controlling at least a three-dimensional object image, comprising:

receiving a first signal from said image controller, said first signal derived from a pressure-sensitive analog sensor associated with a single independent depressible button positioned in a right-hand area of said image controller, said first signal used to control said three-dimensional object image, and

sending a second signal to said image controller, said second signal used to provide an active tactile feedback vibration felt by a hand of a human user, the act of sending said second signal results from virtual contact of said three-dimensional object image caused by the act of receiving said first signal.

22. (once amended) A method of interacting with an image controller according to claim 21 further comprising receiving a third signal and a fourth signal, the third and fourth signals used as three-dimensional viewpoint navigating commands.

23. (once amended) A method of interacting with an image controller according to claim 22 wherein the third and fourth signals are provided by two bi-directional proportional sensors located within said image controller.

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24. (once amended) A method of interacting with an image controller according to claim 23 wherein a fifth signal is provided by a third bi-directional proportional sensor and a sixth signal is provided by a fourth bi-directional proportional sensor located within said image controller; and said button having a tactile resilient structure for providing a user discernable tactile feedback upon depression of said button; at least two of the sensors connected to at least one sheet.

25. (once amended) A method of using an image controller controlling at least a three-dimensional object image, comprising the acts:

receiving a three-dimensional object command from at least one of four bi-directional proportional sensors, and

sending an active tactile feedback command to said image controller, the act of sending results from virtual contact of the three-dimensional object caused by the act of receiving, whereby the sending of the active tactile feedback command causes vibration to be felt by a hand of a human user, the vibration related to contacting of the three-dimensional object image.

26. A method of using an image controller according to claim 25 further including the act receiving a three-dimensional viewpoint navigating command from said image controller.

27. A method of using an image controller according to claim 26 wherein the three-dimensional commands are provided at least in part by four unidirectional sensors located in said image controller.

28. A method of using an image controller according to claim 27 wherein the three-dimensional commands are provided at least in part by activation of two single independent buttons positioned to activate proportional sensors located within said image controller.

29. A method of using an image controller according to claim 28 wherein at least one of said buttons has a tactile resilient structure for providing a user discernable tactile feedback upon depression of the button; at least two of the sensors connected to at least one sheet.

30. A method of interacting with an image controller controlling electronic game imagery, comprising the acts:
receiving a command from at least one of ~~four bi-directional~~ proportional sensors located in said image controller; and
~~receiving a command from at least one of four unidirectional sensors located in said image controller; and~~
receiving a command from at least one of two single independent buttons positioned to activate proportional sensors connected by a sheet within said image controller, said buttons having a resilient tactile structure providing a tactile feedback to at least one finger of a hand of a human user;

sending an active tactile feedback command to said image controller, the active tactile feedback command causes a motor to rotate an offset weight located in said image controller causing a vibration to be felt by the hand of the human user.

31. A method of interacting with an image controller controlling electronic game imagery, comprising the acts:

receiving a command from at least one of four bi-directional proportional sensors located in said image controller; and

receiving a command from at least one of four unidirectional sensors located in said image controller; and

receiving a command from at least one of two independent pivotal buttons structured to activate proportional sensors located within said image controller;

sending an active tactile feedback command to said image controller, the active tactile feedback command causes a motor to rotate an offset weight located in said image controller causing a vibration to be felt by a hand of a human user.

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32. A method according to claim 31 wherein said four unidirectional sensors are proportional sensors and have resilient tactile structuring for providing user discernable tactile feedback upon depression of independent buttons associated with said four unidirectional sensors.

33. A method of interacting with an image controller controlling electronic game imagery shown on a television, said image controller comprising a hand held housing, four bi-directional proportional sensors, four unidirectional sensors, two unidirectional proportional sensors, and a motor with offset weight; the method comprising:

receiving a first signal from at least one of the sensors, the first signal useful for controlling the imagery; and

sending an active tactile feedback signal to said image controller, the active tactile feedback signal causes said motor

to rotate said offset weight causing a vibration to be felt by the hand of the human user.

34. A method of interacting with an image controller according to claim 33 wherein said two unidirectional proportional sensors are connected by at least one sheet and said two unidirectional proportional sensors produce a user discernable snap tactile feedback felt by the user's finger upon sensor activation.

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